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Research Memorandum 77-28



ENLISTED RATINGS OF POSSIBLE INCENTIVES FOR SKILL ACQUISITION

Richard D. Bloom

ARI FIELD UNIT, PRESIDIO OF MONTEREY, CALIFORNIA

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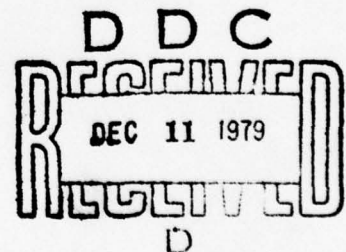
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FOR SKILL ACQUISITION.

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ABSTRACT

ENLISTED RATINGS OF POSSIBLE INCENTIVES FOR SKILL ACQUISITION

SUMMARY

→ This report was prepared in response to a request by TRADOC/TMI to investigate the value of incentives which might be used with enlisted men (EM) for acquiring individual skills as defined in the Soldiers Manuals. This research was part of the FY 77 ARI Work Program falling under the ARI project entitled "Performance-Oriented Individual Skill Development and Evaluation."

ABSTRACT

A questionnaire consisting of 39 descriptions of different possible incentives was given to 218 EM who were in either MOS 11B or 11C. The participants were asked to rate each incentive for its value as a reward for skill proficiency.

Many incentives were identified as potential rewards because they were rated moderately or highly valuable by the enlisted sample. Some positively valued incentives -- for example, one- to three-day special passes, recognition awards such as being honored Post Soldier of the Month, and awards facilitating promotion -- appear managerially feasible. Such valued and practical incentives have value ratings roughly comparable to a \$5 increase in monthly salary or a one-time bonus of \$50.

Financial awards and incentives which provide the enlisted man with increased freedom, although highly valued, are not judged currently practical.

Different incentives have been identified which may be incorporated as part of a management system for training individual skills in unit settings.

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ENLISTED RATINGS OF POSSIBLE INCENTIVES FOR SKILL ACQUISITION

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ENLISTED RATINGS OF POSSIBLE INCENTIVES FOR SKILL ACQUISITION

INTRODUCTION

MILPERCEN, in conjunction with TRADOC, has introduced the Enlisted Personnel Manpower System (EPMS) as an important element in the Army's Individual Training System. A major objective of EPMS is to insure that enlisted men (EM) are retained and promoted on the basis of demonstrated proficiency on the individual skills described in the Soldier's Manual for their MOSSs. In evaluating a soldier's skill proficiency under EPMS, reliance has been placed on a set of performance-oriented, criterion-reference tests called the Skill Qualification Tests (SQT).

To support EPMS and to prepare enlisted men for the SQTs, the Individual Extension Training System (IETS) is being developed at Fort Ord.¹ One major aim of IETS is to provide the individual soldier, working in a field unit setting, with performance-oriented training.

In the first year of IETS development, attention was directed toward motivating soldiers to learn the skills defined in their Soldier's Manual. The major source of motivation to train is the EPMS requirement for retention and promotion which can be satisfied through acceptable performance on the Skill Qualification Test. The SQT will be administered only once every other year. The reward for succeeding on it, therefore, is not immediate, and the incentive for learning individual skills may be too weak to motivate the soldier's continual training efforts.

One solution to this motivation problem might be to use incentives which can be provided promptly when a soldier learns or relearns the individual skills defined in the Soldier's Manual. Such a strategy is consistent with motivation theory, which stresses that performance and effort are more likely to be sustained if promptly followed by a reward.

OBJECTIVE

In response to the problem of motivating the individual to train, an investigation was carried out to determine preferences among EM for various kinds of incentives which might be used as prompt rewards for attaining skill proficiency. In addressing this objective, two possible research directions might be taken. One approach would be to introduce various kinds of incentives on an experimental basis to determine which ones have the greatest positive impact on training outcomes. Such an

¹Appreciation is expressed to Dr. Jack Hiller, ARI Field Unit, Presidio of Monterey, for his suggestions in preparing this report, and to Dr. Hilton Bialek, HumRRO, Western Division, for his aid in implementing this study.

approach would be costly and time consuming, however, because it would require evaluating many possible incentives within field settings. An alternative approach, and the one adopted for this research, would be to estimate, by questionnaire, EM's preferences toward different kinds of incentives as rewards for their individual training effort.

RELEVANT LITERATURE

The literature on training motivation was reviewed to find studies which could aid in the definition of enlisted training incentives. Two studies were found (Bialek and McNeil, 1968, and Pritchard, 1974).² In both studies the participants, Army draftees in the Vietnam War era (Bialek and McNeil) and enlisted Air Force personnel receiving advanced technical training in the 1970s (Pritchard), were asked to rate a number of incentive descriptions in terms of their value as rewards for skill learning.

The results of both studies identified a number of valued training incentives that might serve as effective incentives. Bialek and Pritchard's findings may have only limited applicability to present research needs however, because the military situation has changed from the Vietnam War era to peacetime and the enlisted population has changed from draftees to volunteers in the late 1970s.

Although Bialek and Pritchard's results may have limited utility, the incentive descriptions used in their questionnaire were reviewed as a possible aid in developing an incentive questionnaire for the current study. Some incentive items used in their questionnaires were more relevant to Army basic training or to Air Force technical training situations than to enlisted personnel assigned to TO&E units. Other items, detailed in the next section, suggested incentive descriptions that could be incorporated into a current questionnaire.

² Pritchard, R. Incentive motivation techniques evaluation in Air Force technical training. Air Force Human Resources Laboratory, AFHRL-TR-74-24, 1974.

Bialek, H. and McNeil, M. Preliminary study of motivation and incentives in basic combat training. HumRRO Technical Report 68-6, 1968.

PROCEDURE

QUESTIONNAIRE DESIGN

The questionnaire was designed to estimate values that EM assign to various possible training incentives. To insure that items in this questionnaire would represent all the different kinds of incentives relevant to the military environment, it was necessary first to construct a classification system, or taxonomy, for incentives. Then by using this taxonomy, incentive items could be systematically selected to represent the various kinds of possible incentives.

To aid in the construction of the incentive taxonomy, items in the Bialek and Pritchard questionnaires were reviewed. The following categories of incentives were developed and classified: (1) Public Recognition, such as being honored Post Soldier of the Month; (2) Autonomy Incentives, such as a three-day pass; (3) Avoidance of Work Details, such as guard duty; and (4) Money and its equivalent. These four categories were then used to guide construction of new items and selection of items from the Bialek and Pritchard questionnaires. Thirty of the 39 items (77%) in the new questionnaire were written by the investigator. The remainder were items from the Bialek and Pritchard questionnaires which were reworded to fit the format of the new questionnaire; specifically, nine of the combined total of 113 items in their two questionnaires were used.

The 39 items in the present questionnaire (Table 1) were distributed as follows: 15 items (38%) dealt with Monetary rewards; 11 (28%) with Public Recognition; 8 (21%) with Autonomy; and 5 (13%) with Avoidance of Work Details. The larger number of incentive descriptions placed in the monetary and recognition categories reflects the investigator's assumptions that these incentives have greater value to enlisted personnel and therefore ought to have greater representation.

Table 1 presents the 39 incentive descriptions placed in their categories.³ Three items, it was decided after construction, could be placed into two categories; these items are included as the last entry of Table 1.

³ A partial confirmation of the investigator's classification system was provided by a factor analysis. Using the Principal Axis Method of factor analysis and a varimax rotation procedure, two major factors, recognition and autonomy, were identified which correspond with two of the content categories listed above.

As seen in Table 1, the wording of seven incentive descriptions (indicated by asterisks) were systematically varied to determine whether a small compared to a large reward version of an incentive would remain valued by enlisted personnel. For all of these systematically varied questions, three versions were used: a high award, such as \$25; medium, such as \$15; and a low award, such as \$5. The different question versions were incorporated as part of forms A (low award version), B, and C (high award version) and administered to approximately equal numbers of the enlisted sample. Except for these special questions, the remaining items in all three questionnaire versions were the same.

Table 1

LIST OF INCENTIVE QUESTIONS

Recognition (R)

Receiving a special medal of recognition for learning a skill.

Having a notice of your training achievement printed in your hometown newspaper.

Receiving a letter of recognition from the Battalion Commander for learning a new skill.

Receiving a ribbon as a recognition for learning a new skill.

Earning points for learning a new skill which can be used to help your squad receive a special group recognition for achievement in training.

Participating in dress ceremony during which you receive special recognition for mastering of a new skill.

Being honored as the Post's "soldier of the month."

Receiving the personal congratulations of the Company Commander.

Table 1 (continued)

Autonomy (A)

Receiving four hours of time off during duty hours to take care of personal business.

Having some say in where you are next assigned if you have to move from Fort Ord.

Having some free time during each duty day for one month to do as you like.

Having the opportunity to be reassigned to the unit (squad, platoon) of your choice.

Receiving increased responsibility in planning your training activities.

* Receiving a special _____ pass.

Form A (one day)

Form B (two days)

Form C (three days)

Monetary (M)

* Receiving _____ worth of coupons to be used in purchasing items at PX.

Form A \$10

Form B \$25

Form C \$50

* Receiving a one-time bonus of _____ for learning a new skill.

Form A \$15

Form B \$25

Form C \$50

* Receiving an increase of _____ in your salary check for as long as you can perform the new learned skill.

Form A \$15

Form B \$10

Form C \$15

* Systematically Varied Items

Table 1 (continued)

- * Receiving coupons worth _____ to purchase meals and snacks at AAFES snack bar or cafeteria.

Form A \$10

Form B \$25

Form C \$50

- * Receiving an increase of _____ per month added to your pay for mastering another duty position.

Form A \$5

Form B \$10

Form C \$25

Avoidance

- * Being excused from any work detail for _____.

Form A One Week

Form B Two Weeks

form C One Month

Being exempt from the next assignment of guard duty.

Not being required to take PT for three weeks.

Multi-Classified Items

Having a letter of recognition for learning a new skill placed in your personnel file. (R,M)

Earning training points by which you can reduce the time required before you can retire. (R,A)

* Systematically Varied Items

Items in the monetary and autonomy categories are not likely to be implemented in the foreseeable future because of their costs. These were included in the questionnaire, however, to insure comprehensive coverage of all kinds of possible training incentives.

In addition, the inclusion of monetary items may aid in the interpretation of the ratings of non-monetary items. Specifically, because money represents a familiar incentive, its value ratings may be readily interpreted. Therefore, money items may in turn provide a meaningful reference point in interpreting the rating on items dealing with the less familiar non-monetary incentives. To use monetary items as a reference point, any given non-monetary item being evaluated would be matched with monetary items that have similar incentive value ratings. For example, because a reward of \$50 would be an effective source of training motivation for most soldiers, any non-monetary incentive achieving the same value rating as \$50 would probably also be effective.

The monetary items also provide a basis for judging whether the non-monetary items included in the new questionnaire approach the upper limits of value ratings that may be achieved with the rating scale employed in this questionnaire. Several of the monetary items were constructed to represent relatively valuable incentives; therefore, these items theoretically represent the upper limit, or ceiling, for value ratings. To the extent that many of the non-monetary items approach or reach this ceiling, it may be inferred that the effort to identify highly valued incentives other than money has succeeded.

PARTICIPANTS

A sample of 218 EM was drawn from two infantry battalions at Fort Ord. The participants ranged in grade from E2 to E6 and all had either an MOS 11B or 11C classification. Approximately 55% of the sample fell within pay grades E3-E4, and nearly 30% of the participants were E2.

RATING SCALE

Participants were asked to rate the value of each incentive description (listed in Table 1) by using the point rating scale shown below:

Scale Values

- (1) "highly valuable as an award"
- (2) "valuable as an award"
- (3) "moderately valuable as an award"
- (4) "slightly valuable as an award"
- (5) "not valuable at all as an award"

RESEARCH PROCEDURE

The questionnaire was administered in company classrooms. At any given administration, from 30 to 50 participants were given the questionnaire. Before responding, participants were given a short briefing emphasizing: (1) that the questionnaire was intended to find out how enlisted men felt about individual training; and (2) that it was to be anonymous. Approximately ten minutes were required to complete the questionnaire.

RESULTS AND DISCUSSION

RATED VALUE OF INCENTIVES

The major objective of this study was to identify a set of possible incentives which might be used as rewards for skill learning. To this end, the data collected for this study have been analyzed to show which incentives were highly valued by the enlisted sample (Table 2); which were judged as moderately valuable (Table 3); and which incentives were judged as non-valued (Table 4).

Inspection of incentives in Table 2 shows that monetary incentives are highly valued, particularly when given on a continuous or salary basis (items 2, 4, 6, and 9). A financial award as low as a \$10 monthly salary increase was strongly valued by the participants. In addition to the financial incentives, two incentives dealing with the soldier's autonomy were also highly valued (items 1 and 5).

Most of the highly valued incentives listed in Table 2, specifically the monetary awards and autonomy-oriented incentives, are not practically feasible at this time. Three incentives having high value, however, appear feasible: item 3, promotion points; item 8, positive comments placed into an EM personnel file; and item 10, a special medal.

Inspection of the moderately valued incentives in Table 3 indicates that many of these deal with some form of recognition for achieving skill proficiency. Other moderately valued incentives include: pass privileges and time off during duty hours (items, 1, 2, 10, 16, and 17); non-continuous financial rewards such as a bonus or fixed-amount coupons which can be exchanged for goods and services (items 4, 7, 11, and 13); and avoidance of work details (item 12).

Many moderately valued incentives included in Table 3 appear to be managerially feasible. Overall, the possible effectiveness of feasible incentives such as a special pass or a recognition award in motivating training effort is suggested. Evidence shows that their ratings are roughly comparable to financial rewards whose values range from a \$5 monthly salary increase (item 5) to a \$50 one-time bonus (item 7).

Table 2

HIGHLY VALUED INCENTIVES - 2.41 or LESS

		Mean	Stan. Dev.	Item ^a Type
1.	Having some say in where you are next assigned if you have to move from Fort Ord.	1.79	1.25	A
* 2.	Receiving an increase of \$25 per month added to your pay for mastering of another duty position.	1.93	1.21	M
3.	Receiving points toward promotion.	2.00	1.17	M;R
* 4.	Receiving an increase of \$20 in your salary check for as long as you can perform the newly learned skill at an acceptable level.	2.00	1.27	M
5.	Having the opportunity to be reassigned to the unit (squad, platoon) of your choice.	2.07	1.28	A
* 6.	Receiving an increase of \$10 in your salary check for as long as you can perform the new learned skill at an acceptable level.	2.23	1.34	M
7.	Earning training points by which you can reduce the time required before you can retire.	2.32	1.45	A;R
8.	Having a letter of recognition for learning a skill placed in your personnel file.	2.36	1.32	M;R
* 9.	Receiving an increase of \$10 per month added to your pay for mastering another duty position.	2.41	1.32	M
10.	Receiving a special medal of recognition for learning a new skill.	2.41	1.32	R

^a R = recognition incentives; M = monetary incentives; A = autonomy incentives

*Systematically varied items

Table 3

MODERATELY VALUED INCENTIVES - BETWEEN 2.43 and 2.86

	Mean	Stan. Dev.	Item ^a Type
* 1. Receiving a special two-day pass.	2.46	1.25	A
2. Having some free time during each duty day for one month to do as you like.	2.46	1.39	A
3. Being honored as the Post's "soldier of the month".	2.53	1.40	R
* 4. Receiving \$50 worth of coupons to be used in purchasing items at the PX.	2.55	1.40	M
* 5. Receiving an increase of \$5 per month added to your pay for mastering another duty position.	2.59	1.59	M
6. Earning points for learning a new skill which can be used to help your squad receive a special <u>group recognition</u> for achievement in training.	2.61	1.29	R
* 7. Receiving a one-time bonus of \$50 for learning a new skill.	2.61	1.30	M
8. Receiving a letter of recognition from the battalion commander for learning a new skill.	2.62	1.31	R
* 9. Receiving an increase of \$5 in your salary check for as long as you can perform the new learned skill at an acceptable level.	2.63	1.32	M
*10. Receiving a special three-day pass.	2.68	1.35	A
*11. Receiving a one-time bonus of \$25 for learning a new skill.	2.72	1.28	M
*12. Being excused from any work detail for two weeks.	2.73	1.54	AV

Table 3 (continued)

		Mean	Stan. Dev.	Item ^a Type
*13.	Receiving a one-time bonus of \$15 for learning a new skill.	2.73	1.20	M
14.	Receiving increased responsibility in planning your training activities.	2.74	1.30	A
15.	Receiving the personal congratulations of company commander.	2.83	1.43	R
*16.	Receiving a special one-day pass	2.85	1.34	P;A
17.	Receiving four hours of time off during duty hours to take care of personal business.	2.86	1.42	A

^aR = recognition incentives; M = monetary incentives; A = autonomy incentives; AV = avoidance incentives; P = pass privileges.

* Systematically varied items.

Table 4 lists the non-valued incentive descriptions. One noted pattern was that incentives associated with avoiding presumably non-preferred post activities such as PT, guard duty, or work details were not rated as valuable.

Table 4

NON-VALUED INCENTIVES - 2.90 OR GREATER

	Mean	Stan. Dev.	Item ^a Type
1. Receiving a ribbon as a recognition of learning a new skill.	2.90	1.35	R
* 2. Being excused from any work detail for one month.	3.02	1.47	AV
* 3. Receiving \$25 worth of coupons to be used in purchasing items at PX.	3.02	1.40	M
* 4. Being excused from any work detail for one week.	3.08	1.50	AV
5. Participating in a dress ceremony during which you receive special recognition for mastering a new skill.	3.10	1.37	R
6. Being exempt from the next assignment of guard duty.	3.11	1.39	AV
* 7. Receiving \$10 worth of coupons to be used in purchasing items at PX.	3.11	1.35	M
* 8. Receiving coupons worth \$10 to purchase means and snacks at any AAFES snack bar or cafeteria.	3.17	1.42	M
* 9. Receiving coupons worth \$50 to purchase meals and snacks at any AAFES snack bar or cafeteria.	3.18	1.52	M
*10. Receiving coupons worth \$25 to purchase means and snacks at any AAFES snack bar or cafeteria.	3.21	1.37	M
11. Having a notice of your training achievement printed in your home town newspaper.	3.30	1.49	R
12. Not being required to take PT for three weeks.	3.79	1.42	AV

^aR = recognition incentives; M = monetary incentives; AV = avoidance incentives.

* Systematically varied items.

EFFECTS OF DIFFERENT INCENTIVE LEVELS

Seven items were systematically varied over three forms of the incentive questionnaire: Form A - least amount of an incentive; Form B - intermediate amount of an incentive; Form C - largest amount of an incentive. The inclusion of alternative item versions within the incentive questionnaire provides an opportunity to estimate the smallest payoff that might be used as an effective incentive.

To determine whether varying the size of an incentive influences its rated value, a comparison was made between the average value ratings of those participants who received either Forms A, B, or C of the questionnaire. Table 5 lists those systematically varied items for which statistically reliable differences were observed between sub-groups of the sample.

Table 5

SYSTEMATICALLY VARIED INCENTIVE DESCRIPTIONS FOR WHICH RELIABLE DIFFERENCES WERE OBSERVED

Item	Question- naire		Mean
	Form	N	
1. Receiving an increase of _____ in your salary check for as long as you can perform the new learned skill at an acceptable level.	A \$5	75	2.63
	B \$10	72	2.23
	C \$20	71	2.00
2. Receiving an increase of _____ per month added to your pay for mastering another duty position.	A \$5	75	2.59
	B \$10	72	2.41
	C \$25	71	1.93
3. Receiving _____ worth of coupons to be used in purchasing items at PX.	A \$10	75	3.11
	B \$25	72	3.02
	C \$50	71	2.55

Table 5 shows that increasing the size of a monetary reward given on continuous basis (Items 1 and 2) was found related to statistically reliable increases in the rated value of the incentive.⁴ Even the small reward versions (Item 1A and 2A), however, when offered on a continuous basis resulted in participants' still rating the items toward the valued end of the continuum, suggesting that even a modest monetary reward could serve as an effective incentive.

The remaining item in Table 5 (item 3) shows that varying the size of a one-time monetary award in the form of PX coupons (item 3) significantly influenced the rated value of the incentive. Only the largest award version (\$50, item 3C), however, was judged as moderately valued.

The four incentives for which variation in size of reward produced non-reliable differences are listed in Table 6. Because no reliable differences were noted for the three versions of a special pass (item 1) it may be assumed that they are equivalent in value for the enlisted man. Furthermore, the three versions of the pass were moderately valued; it would appear, then, that a one-day pass would be as effective as either a two- or three-day pass.

In addition, no reliable difference in rated preference was noted when a one-time bonus was varied from a relatively small to a relatively large award version. Regardless of reward size, however, participants rated a one-time bonus as moderately valued. Accordingly, a relatively small bonus of, for example, \$15 (item 2A) might serve as an effective incentive.

The remaining items in Table 6, item 3 dealing with receiving an AAFES coupon and item 4 with being excused from a work detail, were generally rated toward the non-valued end of the rating scale, regardless of size of reward.

⁴ To determine that statistically significant differences were present for items in Table 5, one-way analyses of variance were applied. For item 1, the F value was 4.24 ($P < .02$; 2, 215 df); for item 2 the F value was 5.08 ($P < .01$; 2, 215 df); for item 3 the F value was 3.47 ($P < .05$; 2, 215 df).

Table 6

SYSTEMATICALLY VARIED INCENTIVE DESCRIPTIONS FOR
WHICH NO RELIABLE DIFFERENCES WERE OBSERVED

<u>Item</u>	<u>Question- naire Form</u>	<u>N</u>	<u>Mean</u>
1. Receiving a special _____ pass.	A 1 day	75	2.85
	B 2 days	72	2.43
	C 3 days	71	2.68
2. Receiving a one-time bonus of _____ for learning a new skill.	A \$15	75	2.73
	B \$25	72	2.72
	C \$50	71	2.61
3. Receiving coupons worth _____ to purchase means and snacks at any AAFES snack bar or cafeteria.	A \$10	75	3.17
	B \$25	72	3.21
	C \$50	71	3.18
4. Being excused from any work detail for _____.	A 1 week	75	3.08
	B 2 weeks	72	2.72
	C 1 month	71	3.02

RELATIVE PREFERENCE OF INCENTIVE CATEGORIES

As indicated earlier, the incentive descriptions were classified into major content categories, such as monetary incentives. A question that may be raised is whether participants showed a preference for one class of incentives over another. In attempting to form some generalization regarding overall preferences, the mean value for each category of incentives was computed, using as the basic data the mean ratings of the incentive questions comprising a given category. Excluded from this analysis were those questions (see Table 1) judged as having multiple classifications.

On an overall basis, the category means were: Autonomy, 2.38; Monetary, 2.67; Recognition, 2.79; and Avoidance, 3.31. A one-way analysis of variance showed a reliable difference among the category means.⁵ Application of the Newman-Kuels test,⁶ however, indicated that the categorical means of autonomy, money, and recognition did not differ reliably from each other, but were reliably different at the .05 level from the mean of the avoidance category.

⁵The F value was 3.82 ($P < .05$; 3, 17 df).

⁶Winer, B. Statistical principles in experimental design. New York: McGraw Hill Book Co., 1962.

In reaching the above generalization, some caution is in order. Because only a limited number of items were included in each of the four incentive categories, it is not possible to claim anything close to a representative sampling of incentive descriptions for each category. Thus, any statement regarding overall preferences of incentive categories must be qualified by the limited incentive descriptions used in this study.

RELIABILITY OF THE DATA SAMPLE

Because the sample of participants consisted of EM from two separate battalions, it was possible to determine whether the basic data (incentive preferences) for this study were consistent across separate infantry units. To determine the extent of data consistency, a correlation was computed between pairs of mean ratings for each incentive question common to both groups of participants (that is, all questionnaire items were used except the seven that were systematically varied). This correlation was .97, indicating that participants from the two battalions showed high agreement in their preference ratings of the incentive items.

CONCLUSIONS AND RECOMMENDATIONS

Incentives that have either high or moderately high values as rewards for achieving skill proficiency have been identified and are listed in Tables 2 and 3. Certain of these valued incentives are clearly feasible at this time, namely those dealing with recognition, pass privileges, and facilitation of promotion. Further indication of these incentives' positive effects on training effort may be inferred by comparing their ratings with those for various financial incentives. Thus, a special pass of either one, two, or three days is roughly comparable to the financial incentive of a \$5 monthly salary increase or a one-time bonus of \$50.

Now that a set of incentives has been identified as both valuable to the EM as well as managerially feasible, a next logical research step is to evaluate the utility of these incentives. Accordingly, it is recommended that one or more of these incentives be operationally tested in unit settings to determine their effectiveness in motivating individual skill training.